PERCEIVED GROUP COHESION AND ITS RELATION WITH INDIVIDUAL AND TEAM PERFORMANCE IN SPORTS

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ABSTRACT

Cohesion is a dynamic concept amongst groups involving group integration, attractiveness to the group, task orientation, and social belongingness. Extensive research shows a positive relationship between cohesion and performance. This study aims to analyze the relationship and predictability of cohesion and its factors on individual and team performance. Participants (*n*=29, 20-26 years) were college athletes representing American football, baseball, women's basketball, women's soccer, and women's volleyball. They were given a survey containing demographic questions, the Group Environment Questionnaire, and a performance questionnaire. Correlational and multiple regression analyses showed a significant relationship between cohesion and both measures of performance, with Group Integration-Task being a strong predictor of team performance. Investing in improving the collective pursuit of a common goal appears to be a good predictor of performance at the team level. These findings can further the literature on cohesion and performance, including improving cohesion and performance amongst groups and teams.

Keywords: cohesion, performance, groups, teams, college athletes, survey, Group Environment Questionnaire

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INTRODUCTION

Literature Review

Research on group cohesion is of interest to practitioners from many fields, including sport psychology, industrial-organizational psychology, military psychology, clinical and counseling psychology, social psychology, and various other group dynamics fields. This research has determined that cohesion increases communication, psychological well-being, and performance of groups and constituents (Ahronson & Camron, 2007; Carron et al., 2002; Filho et al., 2014; Mullen & Copper, 1994). Cohesion within groups and teams is commonly defined as "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (Carron, Brawley, & Widmeyer, 1998, p. 213). Indeed, this definition highlights the aspects of solidarity and attractiveness of individuals to task and social functions of the group. Given that cohesion is a manifestation and product of groups, in order to understand the nature of groups there must be an understanding of the cohesion of groups (Carron & Brawley, 2012).

Cohesion

Carron and Brawley (2012) explain that cohesion is dynamic, based on an instrumental purpose, and has aspects of social bond, belongingness, and affect. This emphasis on having an instrumental purpose equates to the concept of task cohesion, and having social bond and affective aspects equates to the concept of social cohesion (Carron, 1982). In an attempt to quantifiably measure the concept of cohesion, Carron et al., (1985) developed the Group Environment Questionnaire (GEQ) in order to have a standard for measuring cohesion within sports teams. The GEQ is an 18-item instrument based on this

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conceptual model. This questionnaire measures individual and group levels of task and social cohesion, and has been a leading instrument in measuring cohesion for over 35 years.

Cohesion is particularly important for groups and teams that depend on communication, coordination, and reliance upon one another (Bell & Brown, 2015). Sports, and the participating teams, is a domain where a lack of cohesion in a team can be glaringly apparent. From a viewers' standpoint, it can be easy to identify teams that do not "gel" well together or have "chemistry", as this can be seen visually as sloppy play, miscommunication, and ultimately poor performance (losing). Conversely, when observing sports teams that have exceptional cohesion, their cohesion is often distinguished by the team exhibiting admiration between teammates, fluid communication and chemistry, and typically positive results in performance (winning). This naturally poses the question: does cohesion increase performance in sports? In two meta-analyses on the relationship between cohesion and performance in sports, it was found that there was indeed a significant moderate to large relationship between the two variables, and that task cohesion showed a greater relationship with performance than social cohesion (Carron et al., 2002; Filho et al., 2014). Additionally, Asamoah and Grobbelaar (2017) found that high individual attraction to the group had a strong relationship with performance (in this case final standing in a university level soccer tournament), and high group integration correlated with lower performance.

Cohesion and Performance

In terms of measurement, there are two paradigms when it comes to studying cohesiveness and performance (Mullen & Copper, 1994). The first paradigm is correlational, where an individual's levels of perceived cohesiveness are measured and compared with group performance. The second paradigm is experimental, where high and low levels of

cohesion are induced in two separate groups, and performance is subsequently measured between the groups. While the conceptualization of cohesiveness has become more straightforward and accepted, measuring performance has been met with concerns of validity, especially with self-reports (Brawley, Martin, & Gyurcsik, 1998). However, Carron et al., (2002) showed that there was no significant difference across 261 participants in measuring performance through self-reports or through behavior measurements. Additionally, correlational paradigm studies were found to have a stronger cohesion-performance effect, being more naturalistic (Carron et al., 2002; Mullen & Copper, 1994). For this study, the correlational paradigm for studying cohesiveness will be used, along with self-reporting on perceptions of team and individual performance.

Nature of Groups vs Teams

Mullen and Copper (1994), in their meta-analysis of 49 studies on the integration of cohesion and performance, analyzed three important factors within the nature of groups for determining the impact of the cohesiveness-performance effect: level of interaction, size of the group, and reality of the group. Results from the study showed that level of interaction did not influence the cohesiveness-performance relationship. Groups that required higher levels of interaction, such as to complete a coordinated task, did not demonstrate a greater effect.

Alternatively, smaller groups had a stronger relationship between cohesion and performance than larger groups, indicating that as groups get bigger, individual participation and level of integration decline (Mullen & Copper, 1994). In addition to these findings, a more recent study by Dobrijević et al., (2020) found that basketball players showed the highest levels of cohesion in comparison to other sports. This is likely due to the dynamic of

the smaller team, as basketball teams typically have between 12-15 players, with only five on the court at a time. Results from these studies seem to express that sports with smaller teams and number of active players on the court or field at any given time, such as basketball and volleyball, elicit higher levels of cohesion than sports with larger teams such as football and baseball.

Finally, the reality of a group (real vs artificial) did indeed affect cohesion. Real groups, or those with extensive history showing high levels of "groupness" or "entitativity" showed much higher effects than artificial groups that were randomly assembled (Mullen & Copper, 1994). The study highlighted sports teams as presenting the highest magnitude of the cohesiveness-performance relationship, significantly more than military teams and other "real" groups. These findings seem to insinuate a fundamental difference between groups and teams. Hausenblas and Carron (1998) define groups as "social aggregates of two or more individuals who possess a common identity, have common goals and objectives, share a common fate, exhibit structured patterns of interaction and modes of communication, hold common perceptions about group structure, are personally and instrumentally interdependent, reciprocate interpersonal attraction, and consider themselves to be a group." Given this definition, and in comparison with the aspects laid out by Mullen and Copper (1994), teams would constitute a real group consisting of a history of experience and interaction, high levels of entitativity, or collective identity, and communal goals.

Purpose

The main purpose of this study is to analyze the relationship of perceived team cohesion in sports teams, using the GEQ, with individual and team performance. With past studies focusing more on a single factor such as measuring only cohesion or a specific

parameter of performance, the current study attempts to further explore the interconnection between the various aspects of cohesion and both team and individual performance. A secondary purpose of this study is to analyze and compare the effect of task cohesion and social cohesion on both measures of performance.

RESEARCH METHOD

Participants

For this study, participants were recruited using two methods. First, participants were recruited using the social media platforms of Twitter, Instagram, Snapchat, and Facebook to ask for current and recent college athletes to volunteer to participate in the study. Secondly, participants were recruited by contacting coaches and program leaders from athletic teams and programs from various areas of the country, particularly from California, Texas, and Oklahoma. Coaches were asked to contact their players to participate in a study that will aid in further defining the impact of team cohesion on performance. Players on these teams were given an option to not participate, as the study was on a volunteer basis. Participants included 44 college and university level athletes, however, only 29 participants (n=29) completed all three phases of the survey. The average age of these 29 participants was 23 (mean= 22.83), with a standard deviation of 1.627. The sports that were represented include men's American football (12), men's baseball (2), women's basketball (1), women's soccer (5), women's volleyball (6), and other (3). There were 16 participants in men's sports (n=16), and 13 participants in women's sports (n=13). Among these participants, 16 took part in the survey in regards to a season from the year 2019 or prior, and 13 in regards to seasons in 2020 or 2021. Additionally, 6 were part of a Junior or Community College athletic program, and 23 part of a University athletic program.

Materials

The measurement instruments used for this study included a demographic survey, cohesion questionnaire, and performance questionnaire. The demographic survey included age, ethnicity/race, women's or men's sport, as well as questions asking the season last

competed (season being assessed; if participants play multiple sports, then responses will be in regards to the sport team being referred to in the questionnaires), level of competition (community/junior college, university), and type of sport participated.

Cohesion-Group Environment Questionnaire

For this study, the cohesion questionnaire was the Group Environment Questionnaire, one of the most popular and widely used metrics for measuring group and team cohesion. This measure has been particularly popular in research in sport psychology, military psychology, organizational psychology, social psychology, and various other areas of research. Consisting of 18 items, each rated on a nine point Likert scale (1=strongly disagree, 9= strongly agree), the GEQ covers Individual Attraction to the Group (ATG) and Group Integration (GI), essential elements of group cohesion measuring perceptions of cohesion from both and individual and group perspective (Carron et al., 1985). Items are categorized further into the two subsets of Social (S) and Task (T) factors to distinguish concerns, motivations, and function of the group. The four resulting dimensions of cohesion are Individual Attraction to Group-Social (ATG-S), Individual Attraction to Group-Task (ATG-T), Group Integration-Social(GI-S), and Group Integration-Task (GI-T). ATG-S is a measure of a participant's perceptions of their social acceptance within and relatedness to the group, whereas ATG-T is a measure of personal desire and involvement with group productivity and goal attainment (Whitton & Fletcher, 2014). GI-S is a measure of the sense of togetherness, closeness, and bonding of the social group, and GI-T is a measure of the attitude toward and perception of bonding around completing a task or objective (Whitton & Fletcher, 2014).

Validity of the GEQ was thoroughly examined by Brawley, Carron, and Widmeyer (1987), two years after the inception of the GEQ. There was evidence that the questionnaire showed concurrent validity to other similar measures, predictive validity (although task-related items showed stronger support than social-related), and construct validity. A more recent multilevel confirmatory factor analysis covering 519 players on 56 teams showed support for internal and external validity, as well as internal reliability of the GEQ (Whitton & Fletcher, 2014).

The GEQ used in the present study consisted of the 18 standard items, each on a nine point Likert scale (1=strongly disagree, 9= strongly agree), but questions were edited into past tense due to assessing the most previous season of competition (some participants could possibly be assessing a season from 2019 due to the Covid-19 pandemic). Scoring of the answers were on the nine point scale, with the answers to questions 1, 2, 3, 4, 6, 7, 8, 11, 13, 14, 17, and 18 being reverse scored when calculating cohesion scores, according to the GEQ scoring instructions. Scores from all 18 questions were averaged to find an Overall Cohesion score (C). Additionally, scores from questions pertaining to each subscale and mid-level grouping were summed and averaged, resulting in scores for ATG-S (5 items), ATG-T (4 items), GI-S (4 items), and GI-T (5 items), as well as Task (ATG-T and GI-T), Social (ATG-S and GI-S), Individual Attraction to Group (ATG-S and ATG-T), and Group Integration (GI-S and GI-T).

Performance

The performance questionnaire was a short, four question, nine point Likert-scale instrument assessing the participant's attitudes on individual and team performance. For individual performance, participants were asked to rate how well they performed individually

in the season being evaluated, in accordance to their own evaluation, as well as the perception of how the level of team cohesion affected the participant's individual performance. Team performance was measured by the team's overall record, and perception of how well the team performed in the season being evaluated. The overall team record question was a simple fill in the blank, writing the competitive overall standing of the team of the season being assessed (ex. 6-4).

Procedure

Given the physical distance between the researcher and the expected participants of the study, as well as health concerns over the ongoing Covid-19 pandemic, the administering of the study was done remotely. Volunteers recruited through social media were provided a link to the study. For participants recruited through their coaches and athletic program leaders, coaches were given instructions to collect a list of emails of the participating players. Players were given an option to not participate in the study. Emails of the participating players to be involved in the study were then gathered and delivered to the researcher. The questionnaires and documents of the study were administered entirely online to participating sports teams and players via link in an email.

After filling out a consent form and receiving instructions for the study, participants filled out the demographic survey, taking approximately two minutes. Next, participants filled out the modified GEQ in regards to the team they were involved with in their most previous season of competition. This took approximately 5-10 minutes. Once the modified GEQ was finished, participants filled out the performance questionnaire, which took approximately two minutes. Participants were then debriefed on the study. The entirety of the study should have taken an estimated 15-20 minutes to complete.

Data Analysis

Correlation and regression analyses using data received from the questionnaire were used in the analysis. First, individual scores of the modified GEQ were recorded, with specified questions 1, 2, 3, 4, 6, 7, 8, 11, 13, 14, 17, and 18 being reverse scored when calculating cohesion scores, according to the GEQ scoring instructions. Scores from all 18 questions were summed and averaged to find an Overall Cohesion score (C). Additionally, scores from questions pertaining to each subscale and mid-level grouping were summed and averaged, resulting in scores for ATG-S (5 items), ATG-T (4 items), GI-S (4 items), and GI-T (5 items), as well as Task (ATG-T and GI-T), Social (ATG-S and GI-S), Individual Attraction to Group (ATG-S and ATG-T), and Group Integration (GI-S and GI-T).

Next, the performance questionnaire responses were analyzed. The two answers pertaining to individual performance on Likert scales were summed and averaged to find a perception of Individual Performance score (IP). As for the team performance, first the overall record was converted to a win percentage, and subsequently into a score on a nine point scale, for fluidity with the Likert scales in the questionnaires (ex. 3-8 record is 0.273 win %, which would convert to a score of 3). The score of both attitude of team performance and the overall record were summed and averaged to find a Team Performance score (TP). After all scores were calculated, correlations between cohesion scores and individual and team performance scores were calculated to determine interrelationships. Additionally, two separate multiple regression analyses, one for individual performance and the second for team performance, were performed to determine the predictive levels of the four subscales of cohesion.

RESULTS

Correlation Analysis

A correlation analysis was performed to determine if there was a relationship between the predictor variables of Overall Cohesion (C), the four subscales of cohesion (ATG-T, ATG-S, GI-T, GI-S), the four mid level groupings (Task; ATG-T & GI-T, Social; ATG-S & GI-S, Individual Attraction to Group; ATG-T & ATG-S, Group Integration; GI-T & GI-S) and the criterion variables of the two measures of performance; Individual (IP) and Team (TP).

Overall Cohesion and Performance

As shown in Table 1, the relationships between Overall Cohesion (*M*=5.867, *SD*= 1.097) and Individual (*M*=6.345, *SD*=1.648) and Team Performance (*M*=5.569, *SD*=2.068) were analyzed. Results of the correlation analysis showed that Overall Cohesion (C) had a moderate positive relationship with both Individual Performance (IP), $r(28)= .381$, $p= .041$, and Team Performance (TP), $r(28)= .367$, $p= .05$. Additionally, Individual and Team Performance showed a strong relationship, $r(28)= .515$, $p= .004$.

Table 1

Correlation between Overall Cohesion Score (C), Individual Performance (IP), and Team Performance (TP)

Variable	n	mean	sd	1	2	3
1. IP	29	6.345	1.648	-	.515*	.381*
2. TP	29	5.569	2.068	-	-	0.367^{+}
3. C	30	5.867	1.097	-	-	-

$^{+}$p= .05 (two-tailed). *p< .05 (two-tailed)

Four Subscales of Cohesion and Performance

In addition to determining a relationship between Overall Cohesion and performance, the study also analyzed the specific relationship between each of the four subscales of cohesion and the two performance variables, as shown in Table 2. Group Integration-Social (M=5.458, SD=1.954) showed a moderately positive correlation with Individual Performance, $r(28)= .395$, $p= .034$, while Group Integration-Task (M=5.267, SD=1.627) showed a very strong correlation with Team Performance, $r(28)= .621$, $p< .001$. Neither Individual Attraction to Group measures of Social or Task (M=6.88, SD=1.401; M=5.758, SD=1.219) showed statistically significant correlation with either performance measure.

Table 2

Correlation between the Four Subscales of Cohesion; ATG-S, ATG-T, GI-S, GI-T, and Individual Performance (IP) and Team Performance (TP)

Variable	n	mean	sd	1	2	3	4	5	6
1. IP	29	6.345	1.648	-	.515**	0.199	0.162	.395*	0.281
2. TP	29	5.569	2.068	-	-	-0.029	0.124	0.232	.621***
3. ATG-S	30	6.88	1.401	-	-	-	.488**	.420*	0.257
4. ATG-T	30	5.758	1.219	-	-	-	-	0.08	0.082
5. GI-S	30	5.458	1.954	-	-	-	-	-	.541**
6. GI-T	30	5.267	1.627	-	-	-	-	-	-

*p< .05 (two-tailed). **p< .01 (two-tailed). ***p<.001 (two-tailed)

Mid-Level Groupings and Performance

From here, the four subscales of cohesion were organized into four mid-level groupings consisting of two subscales each, and were tested to examine the relationship with both measures of performance, as presented in Table 3. These four groupings included Task (*M*=5.485, *SD*=1.091), Social (*M*=6.428, *SD*=1.389), Individual Attraction to Group (*M*=6.381, *SD*=1.145), and Group Integration (*M*=5.352, *SD*=1.556). Task included both measures of task cohesion, ATG-T and GI-T, and Social included both measures of social cohesion, ATG-S and GI-S. Task cohesion showed a strong relation with Team Performance, $r(28) = .574$, $p < .001$, whereas Social cohesion did not show a significant correlation with either performance measure.

Table 3

Correlation between Four Mid-Level Groupings, Individual Performance (IP) and Team Performance (TP)

Variable	n	mean	sd	1	2	3	4	5	6
1. IP	29	6.345	1.648	-	.515**	0.312	0.357	0.213	.384*
2. TP	29	5.569	2.068	-	-	.574***	0.129	0.038	.491**
3. Task	30	5.485	1.091	-	-	-	.560***	.577***	.777***
4. Social	30	6.248	1.389	-	-	-	-	.713***	.761***
5. ATG	30	6.381	1.145	-	-	-	-	-	0.305
6. GI	30	5.352	1.556	-	-	-	-	-	-

*p< .05 (two-tailed). **p<.01 (two-tailed). ***p< .001 (two-tailed)

Individual Attraction to Group included both ATG-T and ATG-S, and Group Integration included both GI-T and GI-S. Group Integration was moderately positively correlated with Individual Performance, $r(28) = .384$, $p = .040$, and strongly correlated with

Team Performance, $r(28) = .491$, $p = .007$. Individual Attraction to Group did not show a significant correlation with either performance measure.

Multiple Regression Analyses

Two separate multiple regression analyses were performed to examine the level of prediction of each of the four subscales of cohesion, ATG-T, ATG-S, GI-T, and GI-S, on performance. For both multiple regression analyses, the predictor variables were the subscales of the cohesion measure. For one analysis, the criterion variable was individual performance, and for the other analysis, the criterion variable was team performance.

Table 4

Multiple Regression Analyses of Individual and Team Performance when related to the Four Subscales of Cohesion (N=29)

	Individual Performance			Team Performance		
Variable	*B*	*SE*	*St. B*	*B*	*SE*	*St. B*
ATG-S	-0.051	0.273	-0.044	-0.435	0.28	-0.296
ATG-T	0.189	0.289	0.139	0.349	0.296	0.204
GI-S	0.292	0.198	0.351	-0.039	0.203	-0.037
GI-T	0.09	0.219	0.091	.883**	0.225	0.699
R^2		0.178			0.459	
F		(4,24)= 1.299			(4,24)= 5.098	
n		29			29	

*p< .05 (two-tailed). **p<.01 (two-tailed). ***p< .001 (two-tailed)

Individual Performance

Results of the Individual Performance regression model showed that it only accounted for 17.8% of the variance in data, and was not a good predictor of Individual Performance, $F(4,24)= 1.299$, $p= .299$. Of the four subscales of cohesion, none of them were significant predictors of Individual Performance.

Team Performance

Alternatively, for Team Performance, results of the regression model showed that it accounted for 45.9% of the variance in data, and was a relatively good predictor of Team Performance, $F(4,24)= 5.098$, $p= .004$. GI-T ($B= .883$, $p< .001$) was a major contributor in predicting Team Performance, which is consistent with the correlation analysis that showed that GI-T is significantly correlated with Team Performance.

DISCUSSION

The primary goal of this study was to determine whether there is a relationship among cohesion (and the sub-elements of cohesion) and team and individual performance in sports teams, specifically among college athletes. Additionally, the study sought to determine if Task or Social cohesion had a stronger relationship with performance, in order to compare with results found by both Carron et al., (2002) and Filho et al. (2014).

Limitations of the Study

Covid-19

Before discussing the contributions of this study, there are a few notable limitations that will be covered. Due to the Covid-19 pandemic, the recruitment of participants, distribution of materials, and subsequent participation were all hindered. Unfortunately, this study was being conducted between January 2021 and April 2021, when sports teams and seasons were just recently being allowed back into participation. Physical access to athletes was scarce due to Covid-19 protocols, and recruitment had to be done solely online. Recruitment was conducted through contacting college coaches via social media and email, as well as posting on social media sites in order to gain the attention of other athletes that the researcher could find, ultimately ending up with less participation than expected (n=44). Additionally, as sports seasons across the United States were postponed or canceled between the spring of 2020 and spring of 2021, the level of participation from athletes suffered, as most were simply not around their teammates or participating in competition during this time. This resulted in expanding the parameters to allow athletes to participate from past seasons, which introduced the factor of the timeframe of team participation referenced in the surveys. This could potentially compromise the reliability of participants' memories of team

dynamics in their last season of competition. The time between the last season competed and participation in the study (Spring 2021) could have been up to two years out of necessity.

Measurement

As previously mentioned, out of the 44 participants, only 29 completed the entirety of the survey. In order to get the most accurate results regarding the relationships between variables, participants had to have to filled out all three survey sections completely: demographic survey, cohesion questionnaire, and performance questionnaire. Given the number of partially completed surveys, which could not be used, the number of final participants was much less than expected and possibly compromised some diversity in the final sample.

Limitations of survey research

All data for this study were collected via survey, and are thus subject to the limitations of survey research. As previously mentioned in the measurements limitations, having a low response rate in survey research, such as in this study, can at times lead to difficulty in the generalization of the results (Martin, 2008). Although participants in this study bring diversity by varying in sports, relative age, and gender, the small number limits the level of application to a larger population. Secondly, survey research lends itself to correlational observations instead of experimental conclusions, therefore making it difficult to make causal inferences between variables. Derivative of a core principle in behavioral research, correlation does not necessarily mean causation. Finally, survey research can occasionally be unreliable in nature due to self-reporting. Biases, motivations about the topic or questions, emotional state, and protection of self can all affect the accuracy and truthfulness of the responses, regardless of the assurances of anonymity (Martin, 2008).

Furthermore, due to the time difference between the responses and the season being evaluated for some of the participants, as mentioned previously, accuracy of memory and perceptions of team dynamics may have changed.

Theoretical Implications

The results of this study have a number of valuable implications for the theory of group cohesion and its relationship to team and individual performance. Individual and Team Performance were both correlated with Overall Cohesion, as shown in Table 1, confirming and adding to the large amount of similar findings in past studies. Although Individual Performance had a slightly stronger correlation with Overall Cohesion than Team Performance, this trend was reversed when the study was taken down to the subscale and grouping levels.

Subscales of Cohesion and Performance

As the study made clear, the general measure of cohesion does indeed have a significant positive relationship with performance, but it is also imperative to determine just how much each of the four subscales of cohesion are correlated with and predict performance. Understanding the relation between each subscale and measure of performance can enlighten not just researchers, but also practitioners and coaches on which aspects of cohesion should be emphasized to produce and sustain performance in their respective domains. The results of the correlation analysis and two regression analyses, shown in Tables 2 and 4 respectively, demonstrated that, of the four subscales, GI-T showed the highest correlation with Team Performance. Additionally, GI-T was the only one of the four subscales that was a significant predictor of either measure of performance. Specifically, it was a very strong predictor of Team Performance. GI-T is the measure of an individual's

attitude toward and perception of bonding around completing a task, which given its predictability of team performance, implies that as team members coordinate and work collectively in pursuit of a common objective, this in turn allows them to perform better as a unit on said objective.

GI-S did have a moderate relationship with Individual Performance in the correlational analyses, but the regression analysis did not show it to be a good predictor of Individual Performance. GI-S represents a sense of togetherness, closeness, and bonding of the social group. Given the mixed results of the present study, it is undetermined to be a reliable predictor of individual performance and needs further research. If relying simply on correlation, this could imply that having an inclusive team culture and collective affection for one another could improve an individual's personal performance within that domain. The relation between GI-S and individual performance aligns similarly with the construct of social facilitation, where individuals experience an increase in performance when in the presence of others, specifically those with which they have positive relations.

As for ATG-S and ATG-T, neither of these variables had any correlating or predicting value for either measure of performance. ATG-S showed the least predictive value in both measures of performance in the two multiple regression analyses, and was the only subscale to have a negative correlation with Team Performance, although only slightly. As ATG-S is the measure of participants' perceptions of their relatedness to the group, the results from the present study suggest that performance, from both an individual and team perspective, has little to do with an individual's feelings of belonging and connection to the group as a whole. Similarly, ATG-T did not show any significant correlation or prediction of either measure of performance. ATG-T measures personal desire and involvement with group productivity and

goal attainment. The results pertaining to ATG-T show that regardless of the level of motivation to help the team achieve its goals, performance at both levels seems to be determined by more than just personal aspirations.

Overall, the results of the subscale correlations and predictions were intriguing. Given the team and group oriented nature of the Group Integration subscales, it was not surprising to see at least one of the two, GI-T or GI-S, end up a significant predictor of Team Performance. However, it was interesting to discover that neither of the Individual Attraction to Group measures, ATG-T or ATG-S, had any correlation at all with Individual Performance given the relative personal and individual nature of the subscales.

Mid-level Groups and Cohesion

Analyzing the mid-level groups of the subscales of cohesion helps to convey a clearer picture of which variables are most related to performance. As previously mentioned, one of the goals of this study was to determine whether Task or Social cohesion had a stronger relationship with performance. As shown in Table 3, Task cohesion, containing measures ATG-T and GI-T, had a substantial relationship with performance, although only in the team measurement of performance. This is likely primarily due to the very strong correlation between GI-T and Team Performance, as ATG-T was not significant. As Task cohesion involves the concerns, motivations, and function of the group toward completing an objective, this reiterates that accomplishment of team goals and assignments is influenced heavily by the collective whole of the group instead of its individual parts.

Social cohesion, containing measures ATG-S and GI-S, had a nearly significant correlation with Individual Performance. This is likely due to GI-S having a moderate correlation with Individual Performance, but overall, Social cohesion did not have a

significant relationship with Individual Performance. Given the previous discussion about both measures of Social cohesion, these results could indicate that having an inclination to cultivate relationships amongst a team without also involving an aspect of accomplishing a task could be of very minimal, if any, help in improving performance. Conceivably, without the emphasis of a target for which the team and its members have to direct their efforts, the level of positive social relationships does not matter. With this data, the study shows that Task cohesion had a stronger relationship with performance than Social cohesion, although primarily at the team level, resembling findings found by Carron et al., (2002) and Filho et al., (2014).

Individual Attraction to Group, or perceptions of cohesion from an individual perspective, showed the lowest levels of correlation of the mid-level groupings, consistent with the two variables ATG-S and ATG-T already discussed. Group Integration, the perceptions of cohesion from a group perspective, showed a positive correlation with both measures of performance; a strong relationship with Team Performance and moderate relationship with Individual Performance. As exemplified at the subscale level, both variables of GI-S and GI-T showed significant correlation with measures of performance. These findings suggest that both individual and team performance can be improved or impaired depending on factors at the group level, which include both elements of cultural camaraderie and a shared vision to accomplish team goals.

From these results, it is clear that GI-T plays a prominent role in determining and predicting team performance. Additionally, GI-S is the only other subscale that demonstrated a significant relationship with performance, specifically Individual Performance. None of the four subscales were significant predictors of both measures of performance. From the

amalgamation of the previous findings, it seems as though having an emphasis on developing togetherness through team tasks and objectives is much more influential on performance in general than prioritizing the development of social relationships amongst team members or trying to accommodate individual aspirations.

Additional Findings

Aside from the relationship between cohesion and performance, there were other interesting findings regarding the relationships between variables. For instance, Individual and Team Performance were significantly correlated with each other, implying that the improvement of one measure of performance is related to an improvement in the other as well. GI-S and GI-T were significantly correlated, $r(28)=.541$, $p=.002$, possibly implying that the level of the sense of togetherness of the group and the unity surrounding a common goal go hand and hand. Another interesting finding was the fact that the two task subscales, ATG-T and GI-T, had no correlation, $r(28)= .082$, $p=.665$. This could possibly suggest that regardless of an individual's personal involvement with obtaining team goals, at the minimum they could still be influenced by the objective of the collective pursuit of team goals.

Practical Implications

In addition to the theoretical implications of the findings of this study, there are also a number of noteworthy practical implications. The present study adds to the existing literature that shows a positive relationship between cohesion and performance. The findings from this study, along with the previous studies on cohesion and performance, suggest that developing and cultivating cohesion amongst a team or group seems to be valuable in terms of the return on performance. Although the stereotypical "team-building" interventions commonly

associated with improving cohesion generally involve developing social relationships between teammates or group members, the results of this study show that developing more task and objective-oriented cohesion amongst the group may be the key to improving performance, predominantly at the team level. This implies that the level of teamwork and bonding focused towards fulfilling a common vision or objective seems to have the greatest impact on team performance, as previously described by Hausenblas and Carron (1998) and Whitton and Fletcher (2014).

This is not to say social cohesion should be less of a priority, as social and task cohesion were shown to have a significant relationship with each other as well. Possibly, this could mean that as a team comes together to complete an objective, the process of cooperating and participating collectively to accomplish a goal also improves the social aspects of belongingness and affection amongst team members. Developing communication and collaboration centered around a specific goal as the primary objective, instead of secondary, may increase togetherness and social affection amongst team members in return. Additionally, it seems as though group integration, or the level of assimilation between a group or teammates, should be given more focus than cultivating an individual attractiveness towards the group. This implies that coaches might do better to put more emphasis on developing a sense of "groupness" or "team" among their players, with team goals and success being the guiding force of motivation. Compared to trying to make a program or organization look attractive using individual glory, social status, playing time, and personal performance as the motivation to perform well, coaches may be inclined to adopt the famous adage of Aristotle; the whole is greater than the sum of its individual parts (980a).

In terms of direct application for sports teams, this manifests as developing a sense of unity amongst a team in which efforts are directed in pursuit of a shared goal; winning a league title, a conference championship, a tournament, or just simply a game. Coaches and leaders of athletic programs can begin to build a culture around accomplishing goals together as a team, emphasizing the importance of collaboration and working together.

Applying the present findings, along with those of other similar studies to industrial/organizational psychology can possibly lead to increased understanding on strengthening group cohesion and ultimately performance in companies. Zoltan and Vancea (2015) found that improving group cohesion leads to increased productivity, higher job satisfaction, and a more functional work environment. For organizations and businesses, this could mean cultivating a sense of togetherness amongst employees to meet a specific profit margin, company sales quota, product or service improvement, or level of customer satisfaction. On an everyday basis, this could look like concentrating efforts to transform the typical work environment and ethos into one that encapsulates a team mentality, emphasizing group projects, collaboration amongst departments, and developing relationships amongst employees.

Other factions aside from sports and business, such as military psychology, can use the findings in a more applicable, practical way. As is well known and documented, military groups and personnel depend heavily on aspects of interconnectedness and teamwork. By developing a mentality as a unit centered around executing a mission successfully and carrying out an objective, military teams can be more seamless, efficient, and effective in the field. These findings could help military organizations understand that through improving group integration and task cohesion, military forces can psychologically be more confident in

their teams, improve individual efficacy, and increase the probability of success during missions (Ahronson & Cameron, 2007).

Future Directions

Research focused on understanding the value of team cohesion can help guide the development of organizational interventions aimed at focusing more time, effort, and resources into teamwork, communication, and coordination of task and social goals to improve team cohesion. This research can also guide cohesion-building activities for sports teams. Team sports are based around individuals working together on a collective goal, with everyone on the team needing to feel as a part of a greater whole (social orientation) to play their role effectively for success to be achieved (task orientation).

This study further examines research on team cohesion in competitive sports teams as well as the relationship between performance and cohesion. In addition, this study adds diversity and value to the literature on the GEQ, extending its reach to more varied populations. In terms of future research studies, American football has been one of the least studied sports when it comes to measuring cohesion. Initially an aim of this study, prior to the unexpectedly low participation rate, measures of cohesion between football and the additional sports were going to be analyzed. Football, which typically has anywhere from 60-100 players on a team, essentially has multiple smaller “teams within a team” (offense, defense, special teams). In a future study, it would be interesting to see if football follows the same patterns of large teams expressing lower levels of cohesion than small teams, or if the interconnectivity of the “teams within a team” plays a significant factor in changing that narrative.

One specific theoretical measure would be to further study the relationship between aspects of Group Integration-Social and Individual performance in regards to social facilitation. As the sense of togetherness, closeness, and bonding of the group did have a positive relationship with individual performance, one can interpret that the concept of social facilitation may be a factor. Additionally, the findings of this study may have implications for methods to increase performance that are already in use, as Curtin et al., (2016) found evidence that using imagery at the team level can increase team cohesion. As shown that cohesion has a positive relationship with performance, testing to see if the effects of using imagery increases performance at the individual or team level would be an intriguing study. Going further in terms of performance, continuing to investigate the relationship between team and individual performance could also be of value. As shown in this study, team and individual performance had a strong correlation with one another. Given the domain-dependence and ambiguity of performance, developing a general standard measurement system may assist honing in on the true nature of this relationship.

Conclusion

The present study sought to further analyze the relationship between cohesion and performance among college athletes, more specifically between the multiple subscales of cohesion and two measures of performance; individual and team. Involved in this study were 29 college athletes in the sports of American football, baseball, women's basketball, women's soccer, and women's volleyball. They were given a survey involving three sections; a demographic portion, the Group Environment Questionnaire, and a short performance questionnaire. Correlational and multiple regression analyses were used to determine relationship and predictability between the constructs.

Overall, results of the study showed that improved cohesion is significantly related to improved individual and team performance. Group Integration-Task, or the perceptions of bonding centered around completing a task, had a very strong correlation and predicting value with Team Performance. Group Integration-Task was the only viable predictor of performance among the subscales of cohesion, as Group Integration-Social had a moderate correlation with Individual Performance, but not a strong predictive value. In real-world situations when looking to improve cohesion, priority should be placed on methods involving developing relatedness amongst team members by collectively working towards a shared goal or objective.

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APPENDIX A

ANGELO STATE UNIVERSITY
College of Graduate Studies
Institutional Review Board

3/31/2021

Dr. Cheryl Stenmark
Dept. of Psychology and Sociology
Angelo State University
San Angelo, TX 76909

Dear Cheryl:

The project that you submitted to the IRB for your student, Noah Holle titled *"Perceived Group Cohesion and its Relation with Individual and Team Performance in Sports"* was reviewed and approved by Angelo State University's Institutional Review Board for the Protection of Human Research Subjects in accordance with federal regulations 45 CFR 46.

This protocol has been approved effective March 31, 2021. If the study will continue past next year, please submit a notification of continuation at that time. Please note that any revisions to these approved materials must be approved by the IRB prior to initiation. All unanticipated problems involving risks to subjects or others, and any unexpected adverse events must be reported promptly to this office.

The approval number for your protocol is #STE-033121. Please include this number in the subject line of in all future communications with the IRB regarding the protocol.

Sincerely,

Teresa (Tay) Hack
Digitally signed by Teresa (Tay) Hack
Date: 2021.03.31 16:39:37 -05'00'

Teresa (Tay) Hack, Ph.D.
Chair of the Institutional Review Board

APPENDIX B

Angelo State University

Institutional Review Board (IRB)

Consent to Participate in an IRB-Approved Research Event

Project Title: Perceived Group Cohesion and its Relation with Individual and Team Performance in Sports

Investigator Name/Department: Noah Holle, Faculty mentor: Cheryl Stenmark

Investigator Phone: 325-486-6131

You are being asked to participate in a research event conducted with the approval of the Angelo State University Institutional Review Board (and if applicable, other relevant IRB committees). In order to participate, you are required to give your consent after reading this document.

An explanation of the project is written below, which includes information about the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. Please read and, should you decide to participate, indicate your agreement on this form. Upon request, you will be given an unsigned copy of this form for your records.

Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time without penalty. I understand also that it is not possible to identify all potential risks in a study, and I believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.

You must be 18 years of age or older to participate.

1. Nature and Purpose of the Project

You are being asked to participate in a research study for Noah Holle at Angelo State University. The purpose of this study is to assess the relationship between team cohesion and individual and team performance in sports teams. You are only permitted to participate once in the current study.

2. Explanation of Procedures.

The study consists of participants completing, online, one survey and two questionnaires. **ATTENTION: Participants will be completing all documents in reference to the last full season of competition for the sport(ex. if the last season you played was in Fall, 2019, then that is the season being evaluated).** First, participants will complete a six question demographic survey. Then, participants will complete an 18-item cohesion questionnaire measuring aspects of cohesion covering individual and group aspects, as well as task and social elements. Finally, participants will complete a four item performance questionnaire covering both team and individual performance. Completing the study will take approximately 15-20 minutes. No compensation will be given.

3. Discomfort and Risks.

The risks of participating in this study are minimal and not expected to be greater than experienced in daily life. Some of the questions may cause some individuals to feel uncomfortable, and everyone has the right to omit answers to any questions without penalty.

4. Benefits.

The findings from this study can add to the existing knowledge related to team cohesion and performance, and can also give you firsthand experience in the research process.

5. Confidentiality.

Your confidentiality is important. Data will be accessible only to the researchers through a secure password-protected online data collection host. Data will be stored for a period of 3 years following the completion of the study, after which all data will be deleted. All data will be reported at the group level, and your name (or any other identifying information) will never be linked to your individual responses. You may risk a loss of confidentiality if you choose to email the researchers to ask for results of the study. If you choose to email the researchers, then the researchers will immediately delete such emails after responding to them. There is a potential risk of loss of confidentiality in all email, downloading, and internet transactions.

Agreement: By clicking on the continue button below you are indicating that you have read the above procedures and that you are consenting to voluntarily participate in this study.

This project has been reviewed and approved by the Angelo State University Institutional Review Board (IRB) for the protection of human subjects in research and research related activities. **IRB #STE-033121 – March 31, 2021.**

Any questions regarding the conduct of the project, questions pertaining to your rights as a research subject, or research-related injury should be brought to the attention of the IRB administrator, Dr. Tay Hack (tay@angelo.edu) TEL: (325) 942-2068, ext. 6121.

Any question about this specific research project should be brought to the attention of the investigator listed at the top of this form.

Click continue ONLY if you agree to participate.

Continue »

APPROVED

By Teresa (Tay) Hack, IRB Chair at 4:44 pm, Mar 31, 2021

APPENDIX C

ANGELO STATE UNIVERSITY
Institutional Review Board

HUMAN SUBJECTS REVIEW FORM FOR NEW OR PERIODIC REVIEW

Please complete this form and the required informed consent form. Print a copy for your records as well.

Principal Investigator (PI)	Noah Holle
PI Department	Psychology and Sociology
Campus Address	2601 W. Avenue N San Angelo, TX 76909
Primary Phone	(661) 633-4903
Primary E-mail	nholle@angelo.edu
Project Title	Perceived group cohesion and its relation with individual and team performance in sports
Proposed Initiation Date	3/14/21

Project will be valid for one (1) year upon approval unless changes are made that require further IRB review.

Student-led Projects

If the Principal Investigator is a student, please provide the following information:

Faculty Advisor/Mentor: Cheryl Stenmark

Student Classification (check one): ○ Undergraduate ◉ Graduate

Funding Source

☐ This research is supported in whole or in part using internal/external grants or other funding sources.
If you checked the box above, you must complete the field below.

Source(s):

Special Conditions

☑ This research will use populations other than the ASU student participant pool(s).
If you checked the box above, approval from other IRB committees may be required before the project can initiate. This must be discussed in your summary of proposed activities.

☐ This proposal describes a series of studies on a particular topic (programmatic research)
Research that is programmatic should include all possible experimental manipulations and measures that could be used within the context of the program. Programmatic research must be reviewed annually and any novel methods, measures or conditions must be presented to the Board before they are used. The Board recognizes that programmatic research does involve some ambiguity regarding future directions and will take that into account in its review.

Detailed Description of Methodology: Provide details about the experimental methodology that you will employ in your study or research program. This section ***MUST*** be organized into separate paragraphs and labeled as follows: A) Participant information (populations utilized, recruitment procedures, number of participants to be recruited, conventions for anonymity and confidentiality of data); B) Measures (measurement devices, information about validity and reliability, necessary references and justifications for use); C) Procedures (track a hypothetical participant through the study; if you are describing programmatic research, include examples of how this hypothetical track could be altered based on preliminary findings); D) Special Topics (intent to use deception, protections for special populations or invasive procedures).

Methodology

A) Participant Information

Participants will be recruited in two manners. First, via social media posts and direct messages on Instagram and Twitter asking for recent and current college athlete volunteers. Secondly, by contacting coaches and program leaders from athletic teams and programs from various areas of the country, particularly from California, Texas, and Oklahoma via text message, phone call, and email. Volunteers from social media platforms will be asked to provide an email to participate in the study. Coaches will be asked to volunteer their players to participate in a study that will aid in further defining the impact of team cohesion on performance. Coaches will be provided with the questionnnaire items during recruitment. Players on these teams will be given an option to not participate, as the study is on a volunteer basis. There is expected to be anywhere between 75 and 200 particpants, depending on respondents, being junior college and university level male and female athletes ranging from 18-24 years old. Sports expected to be represented include football (American), baseball, softball, basketball, soccer, and volleyball.

Participants will be identified using a three digit participant identification number. Confidentiality will be ensured by allowing only approved researchers to access the data, which will not be linked to personal identifiers. No individual-level analyses will be performed or reported. In published reports, there will be no information included that will make it possible to identify the research participant. Findings will only be presented in aggregate with no personally identifying information to ensure confidentiality

B) Measures

The measurement instruments that will be used for this study include a demographic survey, performance questionnaire, and the Group Envioronment Questionnaire to measure cohesion.

Demographic survey

The demographic survey will include six questions covering age, ethnicity/race, men's or women's sport, the season last competed (season being assessed, if participants play multiple sports, then responses will be in regards to the sport team being referred to in the questionnaires), level of competition (community/junior college, university), and type of sport participated(ex. basketball, baseball).

Performance Questionnaire

The performance questionnaire will be a short, four question, nine point Likert-scale document assessing the participant's attitudes on individual and team performance. For individual performance, participants will be asked to rate how well they performed individually(1=very poorly, 9=exceptionally well) in the season of evaluation, as well as the perception of how much they felt the team cohesion affected the participant's individual performance(1=not at all, 9= greatly impacted). Team performance will be measured by the team's overall record, and how well the participant thinks the team performed(1=very poorly, 9=exceptionally well) in the season of evaluation. The overall team record question will be a simple fill in the blank, writing the competitive overall standing of the team of the season being assessed (ex. 6-4).

Methodology (pg. 2)

B) Measures (continued)

Cohesion - GEQ

For this study, the cohesion questionnaire will be a variation of the Group Environment Questionnaire, one of the most popular and widely used metrics for measuring group and team cohesion. This measure has been particularly popular in research in sport psychology, military psychology, organizational psychology, social psychology, and various other areas of research. Consisting of 18 items, each on a nine point Likert scale (1=strongly disagree, 9= strongly agree), the GEQ covers individual attraction to the group (ATG) and group integration (GI), both essential elements of group cohesion (Carron et al., 1985). Items are categorized further into the two subsets of social (S) and task (T) factors to distinguish concerns and functions of the group. The four resulting dimensions of cohesion are Individual Attraction to Group-Social (ATG-S), Individual Attraction to Group-Task (ATG-T), Group Integration-Social(GI-S), and Group Integration-Task (GI-T). ATG-S is a measure of a participant's perceptions of their own motivations for social acceptance and relatedness to the group, whereas ATG-T is a measure of personal desire and involvement with group productivity and goal attainment (Whitton & Fletcher, 2014). GI-S is a measure of the sense of togetherness and closeness of the social group, and the GI-T is a measure of the level of teamwork and bonding to complete a task or objective (Whitton & Fletcher, 2014).

Validity of the GEQ was thoroughly examined by Brawley, Carron, and Widmeyer (1987), two years after the inception of the GEQ. There was evidence that the questionnaire showed concurrent validity to other similar measures, predictive validity (although task related items showed stronger support than social-related), and construct validity. A more recent multilevel confirmatory factorial analysis covering 519 players on 56 teams showed support for internal and external validity, as well as internal reliability of the GEQ (Whitton & Fletcher, 2014). For this study, a modified version of the GEQ will be used to assess levels of cohesion.

The modified GEQ used for the present study will consist of the 18 standard items, each on a nine point Likert scale (1=strongly disagree, 9= strongly agree), but questions will be edited into past tense due to assessing the most previous season of competition (some participants could possibly be assessing a season from 2019 due to the Covid-19 pandemic). Scoring of the answers will be on the nine point scale, with the answers to questions 1, 2, 3, 4, 6, 7, 8, 11, 13, 14, 17, and 18 being reverse scored when calculating cohesion scores. Scores from all 18 questions will be averaged to find an overall cohesion score, as well as across the four dimensions of cohesion; ATG-S (5 items), ATG-T (4 items), GI-S (4 items), and GI-T (5 items).

C) Procedures

Given the physical distance between the researcher and the expected participants of the study, as well as health concerns over the ongoing Covid-19 pandemic, the administering of the study will be done remotely. Volunteers from social media will be instructed to provide an email to the researcher in order to participate in the study. After participation of the study has been confirmed by agreeing coaches and athletic program leaders, coaches will be given instruction to collect a list of emails of the participating players. Players will be given an option to not participate in the study. Emails of the participating players to be involved in the study will then be gathered and delivered to the researcher. The questionnaires and documents of the study will be administered online to participating volunteers, sports teams, and players via link in an email.

1) Signing of consent form, receiving instructions for the study. Approximately two minutes.
2) Completion of the demographic survey. Approximately two minutes.
3) Completion of the modified Group Environment Questionnaire. Approximately five to ten minutes.
4) Completion of the performance questionnaire. Approximately two minutes.
5) Debriefing. Approximately two minutes.

The entirity of the study should take approximately 15-20 minutes.

D) Special Topics

We do not intend to use deception in this study. We do not intend to use any special populations.

Procedures for PI Contact: In this section, describe how inquiries, complaints and/or grievances concerning the proposed study will be addressed. This section ***MUST*** be organized into two separate paragraphs and labeled as follows:

A) Addressing Participants (how you will address inquiries, complaints, and/or grievances concerning the study, including a description of where you will provide participants with the contact information for the PIs and the IRB administrator [consent form, debriefing form, etc.]); and

B) Participant Debriefing (how you will debrief the participants and give them access to information about the study's results).

Procedures for Grievance

A) Addressing Participants
Inquiries and complaints will be addressed on a case-by-case basis, depending on the nature of the concern. In the case there are any inquiries, complaints, and/or grievances, contact information for the principal investigator (Noah Holle) will be provided on both the informed consent form as well as the debriefing form, and information for the IRB administrator will be provided on the debriefing form.

B) Participant Debriefing
The debriefing form will explain the full nature of the study. Within the debriefing form, participants will be thanked for giving their time to contribute to this study on the relationship between team cohesion and performance in sports. It will also be stated that all responses will be confidential, with no individual names being linked to any data. In addition, it will be stated that when the study is concluded, participants will be sent an email to access the final results.

☑ I am familiar with the policies and procedures of Angelo State University and 45 CFR 46 regarding human subjects. I subscribe to these standards and will adhere to them at all times.

☑ I understand that approval of the project as described herein in no way permits the researcher to alter the research program or study beyond the constraints placed on the Board's approval and/or the constraints on human subjects research as outlined in 45 CFR 46. Unapproved deviation from the approved protocols as contained in this document that increases participant risk is STRICTLY PROHIBITED.

Principal Investigator Signature (type names of each principal investigator)

Noah Holle

☑ I (We) affirm that the signature above was completed by the person(s) named therein.

For Student-Led Projects

Faculty Advisor/Mentor Signature (type names of each faculty advisor/mentor)

Cheryl Stenmark

☑ I (We) affirm that the signature above was completed by the person(s) named therein.